

Remarks/Arguments

Applicants have received and carefully reviewed the Final Office Action mailed on December 18, 2006 and the Advisory Action mailed April 10, 2007. Claims 1-27 remain pending. Support for the amendments is found in the specification, claims, and drawings as originally filed. No new matter has been added. Reconsideration and reexamination are respectfully requested.

Interview Summary

The undersigned would like to thank the Examiner for the courtesies extended during the previous telephonic interview. Claims 1, 12 and 17 were discussed, but no agreement was reached. Specifically with respect to claim 12, the Examiner noted that the language does not preclude a person from performing the recited steps.

Rejections under 35 U.S.C. § 102(a)

Claims 1-4, 6-12, 15, 18-22 and 24-26 are rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent No. 6,647,302 to Pouchak (hereinafter, Pouchak '302). Independent claims 1, 8, 12, 17, 18, and 25 have been amended to recite a "computer implemented" method, and thus the claims are now clearly distinguished from a person performing the recited steps.

The Examiner asserts that Pouchak '302 teaches every element of the claimed methods, pointing to column 13, line 30 to column 14, line 47 and column 15, line 61 to column 16, line 2 for support. Applicants respectfully disagree. Independent claim 1 recites a computer implemented method involving the method steps of performing a staging sequence to determine how many of the plurality of stages should be active, modulating a first stage to operate at less than 100% of its output, and modulating a second stage to operate at less than 100% of its output, wherein the first and second stages are modulated while both stages are active. Pouchak '302 does not appear to teach such method steps.

The cited portions of Pouchak '302 do appear to disclose adding and removing stages, but do not appear to specifically teach modulating the stages while they are active. For example, Pouchak '302 states, "actively manage multiple-stage node analog control level and on/off stage decisions changes such as and adding and removing functioning stages." See column 13, lines 40-42. Pouchak '302 also states, "decisions made in sequence node 300 algorithms for control

relating to analog firing rate and the addition or deletion of a stage." See column 14, lines 5-7. Pouchak '302 further states, "this option would add a boiler when the load is such that the added boiler can run at minimum capacity. For example, if boiler number 1 reaches a 60% load, then boiler number 2 could be added such that both boilers can operate at 30%." See column 15, lines 64-67. Pouchak '302 thus appears to teach adding or deleting a boiler or stage, but does not appear to specifically teach modulating first and second stages while they are both active, as is recited in independent claim 1. Applicants submit that adding and deleting boilers or stages, at a certain modulation rate (e.g. 30%), does not anticipate the method step of modulating first and second active stages while they are active.

Independent claim 8, as amended, recites a computer implemented method involving the steps of performing a staging sequence to determine which of the plurality of stages should be active or inactive, resulting in a number of determined active stages, activating the determined active stages, if any; and when the determined active stages includes two or more of the plurality of stages, modulating the active stages while they are active. As discussed above, while Pouchak '302 appears to teach turning stages on or off, the reference does not appear to specifically teach modulating active stages while they are active.

Claim 12 recites, in part, the steps of performing, at a first interval, a staging sequence to determine how many of the stages should be active; and performing, at a second interval shorter than the first interval, a modulating sequence to modulate the active stages. These steps do not appear to be disclosed in the cited passages of Pouchak '302, and the rejection does not appear to specifically address this claim in any manner. MPEP § 2131 states:

TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). ... "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). (emphasis added).

Pouchak '302 clearly does not disclose each and every element recited in claims 1. It is respectfully requested that the Examiner specifically point out where each and every element of

claim 12 is disclosed in Pouchak '302, and in particular, where in Pouchak '302 the first interval and the second interval are disclosed.

Pouchak '302 clearly does not disclose each and every element recited in claims 1, 8, and 12, or the identical invention in as complete detail as is contained in claims 1, 8, and 12. As such, claims 1, 8, and 12 cannot be anticipated by Pouchak '302. Withdrawal of the rejection is respectfully requested. *If the Examiner elects to maintain this rejection, Applicants respectfully request that the Examiner specifically point out where in Pouchak '302 each and every element recited in claims 1, 8, and 12 can be found.* For the foregoing reasons, independent claims 1, 8, and 12 and the claims dependent thereon, are all believed to be clearly patentable over Pouchak '302.

Independent claim 18 recites a computer implemented method of staging and modulating a boiler system in response to a load comprising the steps of: staging and modulating the system using a first control method that is adapted for achieving increased efficiency under a first set of conditions; and staging and modulating the system using a second control method that is adapted to allow cycling of the stages under a second set of conditions. These steps do not appear to be disclosed in the cited passage of Pouchak '302, and the rejection does not appear to specifically address this claim in any manner. Pouchak '302 does not appear to disclose each and every element recited in claim 18, or the identical invention in as complete detail as is contained in claim 18. As such, claim 18 cannot be anticipated by Pouchak '302. Withdrawal of the rejection is respectfully requested. *If the Examiner elects to maintain this rejection, Applicants respectfully request that the Examiner specifically point out where in Pouchak '302 each and every element recited in claim 18 can be found.* For these and other reasons, claim 18 along with dependent claims 19-24, are all believed to be clearly patentable over Pouchak '302.

Independent claim 25 recites a computer implemented method of performing a staging sequence for a multi-stage boiler system in which at least one stage can be either active or inactive, the method comprising: observing an error measured as a difference between a temperature and a setpoint; observing a rate of change of the error; and combining the error and the rate of change of error to determine whether: an inactive stage should become active; an active stage should become inactive; or no change in the number of active stages is necessary (emphasis added). These steps do not appear to be disclosed in the cited passage of Pouchak '302. The rejection specifically cites to column 14, lines 21-34. However, this passage does not

appear to disclose the specific method steps recited in claim 25. More specifically, the cited passage of Pouchak '302 does not appear to disclose each and every element recited in claim 25, or the identical invention in as complete detail as is contained in claim 25. As such, claim 25 cannot be anticipated by Pouchak '302. Withdrawal of the rejection is respectfully requested. *If the Examiner elects to maintain this rejection, Applicants respectfully request that the Examiner specifically point out where in Pouchak '302 each and every element recited in claim 25 can be found.* For these and other reasons, claim 25 along with dependent claim 26, are believed to be clearly patentable over Pouchak '302.

Claim 17 stands rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,042,431 to Shprecher et al. Claim 17 recites:

17. (Currently Amended) A computer implemented method of controlling a multi-stage boiler system having a number of stages that can be either active or inactive, the method comprising the steps of:
determining whether to make an inactive stage active; and
determining whether to make an active stage inactive; wherein:
a first delay is provided after making an inactive stage active,
a second delay is provided after making an active stage inactive, and
the first delay is longer than the second delay.

As can be seen, claim 17 recites the step of: determining whether to make an inactive stage active; determining whether to make an active stage inactive; wherein: a first delay is provided after making an inactive stage active, and a second delay is provided after making an active stage inactive, wherein the first delay is longer than the second delay. Nothing in Shprecher et al. appear to teach these specific method steps.

The rejection specifically cites to column 4, line 53 to column 5, line 2 of Shprecher et al., which states:

The controls appearing inside access panel 50 are illustrated in FIG. 2. In order to make adjustments, a slide switch 52 is moved to the "setup" position, and after all adjustments are completed, it is moved to the "normal" position. When trimmer potentiometers, A1, B1, C1, or D1 are adjusted, the ignition points of the corresponding stages are adjusted. Similarly, when trimmer potentiometers A2, B2, C2, or D2 are pressed, the start of modulation threshold point for enabling the stage after the corresponding stage is set. When pushbutton 42 is pressed repeatedly, LEDs alongside the trimmer potentiometers are lit in turn, and the setting of the corresponding trimmer potentiometer may then be read on display 40. Similarly, potentiometer E permits setting the short-cycling delay in minutes, potentiometer G allows for setback of the setpoint temperature or pressure, and potentiometer H permits adjustments of the standby time in minutes.

It appears that this passage allows the user to modify a short-cycling delay, and that the duration of a stand-by mode is adjustable. However, the stand-by mode appears to be a mode in which the boiler is indicated to be turned on, but is waiting for expiration of a delay period (e.g. on stand-by). There would appear to be no indication that a first delay is provided after making an inactive stage active and a second delay is provided after making an active stage inactive, wherein the first delay is longer than the second delay, as recited in claim 17. As noted above, MPEP § 2131 states that in order to anticipate a claim, a reference must teach every element of the claim. The cited passage of Shprecher et al. does not appear to disclose each and every element recited in claim 17, or the identical invention in as complete detail as is contained in claim 17. As such, claim 17 cannot be anticipated by Shprecher et al. Withdrawal of the rejection is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Pouchak '302 in view of U.S. Patent No. 6,536,678 to Pouchak (hereinafter, Pouchak '678). For at least the reasons set forth above, Pouchak '302 does not appear to teach the basic elements of independent claim 1, from which claim 5 depends. Pouchak '678 does not appear to provide what Pouchak '302 lacks. Thus, even if one were to combine the references, one would not arrive at the claimed method.

Based on the Examiner's comments on page 3 of the Final Office Action, and with respect to claim 13, 14, and 23, the Examiner may be attempting to argue that claim 17 would be obvious over Shprecher et al. That is, the Examiner might be suggesting that the elements of claim 17 related to activating/deactivating stages for the recited time periods would be simply a matter of design choice because Applicants have not established any criticality or synergistic result which are derived from the recited configuration. Applicants do not understand this rejection, as this is clearly not the proper standard for anticipation or obviousness. That is, the Examiner appears to be suggesting that the reference fails to show something, but because Applicants have not identified a particular advantage for that which is missing, the claim is obvious. That is simply incorrect. The proper standard for obviousness, as stated in the MPEP, is as follows:

2143.03 All Claim Limitations Must Be Taught or Suggested

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

As can be seen, to establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. It is irrelevant whether the Applicants have indicated that certain elements lacking in the cited reference are critical or provide synergistic results which are derived from the recited configuration. In fact, it is believed that, at least because these claims recite elements that appear to be lacking in the cited Pouchak '302 and Shprecher et al. references, claim 17 would be clearly patentable over the cited references.

The only portion of the MPEP that appears to relate to the Examiner's comments is MPEP § 2144.04 VI (C), which states:

C. Rearrangement of Parts

In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) (Claims to a hydraulic power press which read on the prior art except with regard to the position of the starting switch were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device.); *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice). ***However, "The mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device."*** *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984).

Providing a first delay after making an inactive stage active, and a second delay after making an active stage inactive, wherein the first delay is longer than the second delay is clearly more of a difference than reciting "a particular placement of a contact in a conductivity measuring device". In any event, MPEP § 2144.04 VI (C) makes clear that the mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. Instead, the prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to

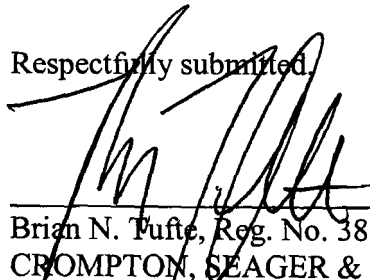
make the necessary changes in the reference device. In the present case, Shprecher et al. does not provide any motivation to activate/deactivate the stages in the claimed manner. For these and other reasons, claim 17 is believed to be clearly patentable over the cited prior art.

Claim 16 was not specifically addressed in the substantive portion of the Final Office Action, and it appears to only be objected to. In any event, it is believed that claim 16 is in condition for allowance.

Reconsideration and reexamination are respectfully requested. It is believed that all pending claims 1-27 are now in condition for allowance. Issuance of a Notice of Allowance in due course is respectfully requested. If a telephone conference would be of assistance, please contact the undersigned attorney at 612-359-9348.

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Respectfully submitted,



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